

FIG. 1 PRIOR ART

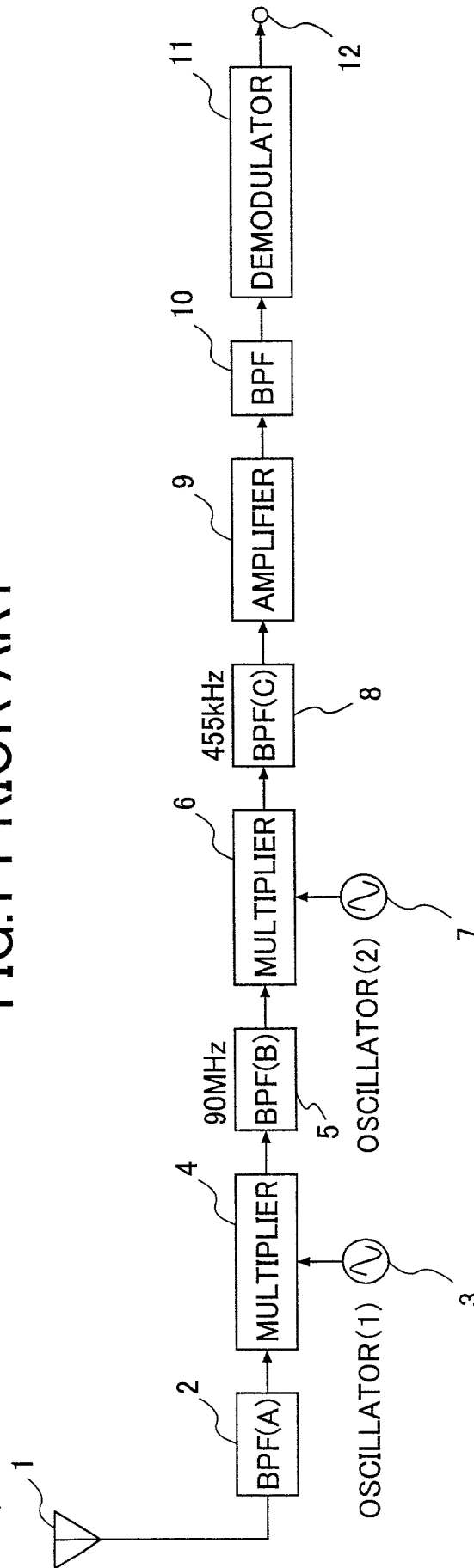


FIG.2A PRIOR ART

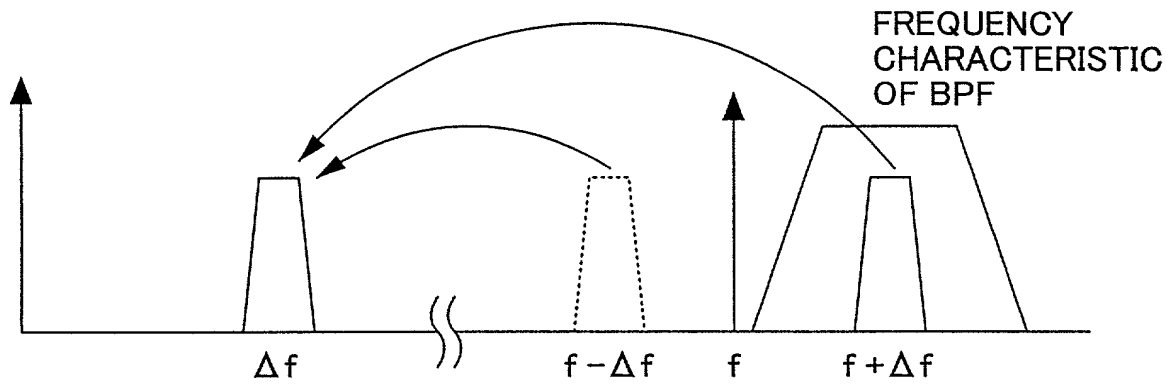


FIG.2B PRIOR ART

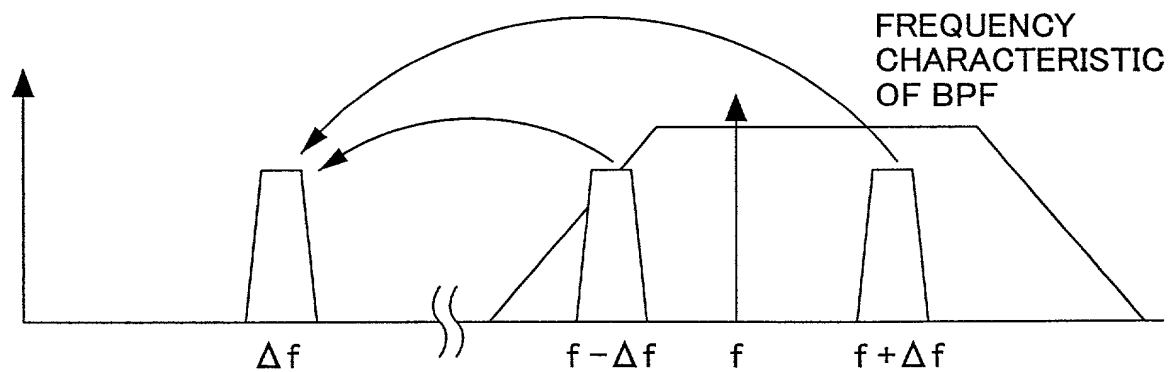


FIG. 3 PRIOR ART

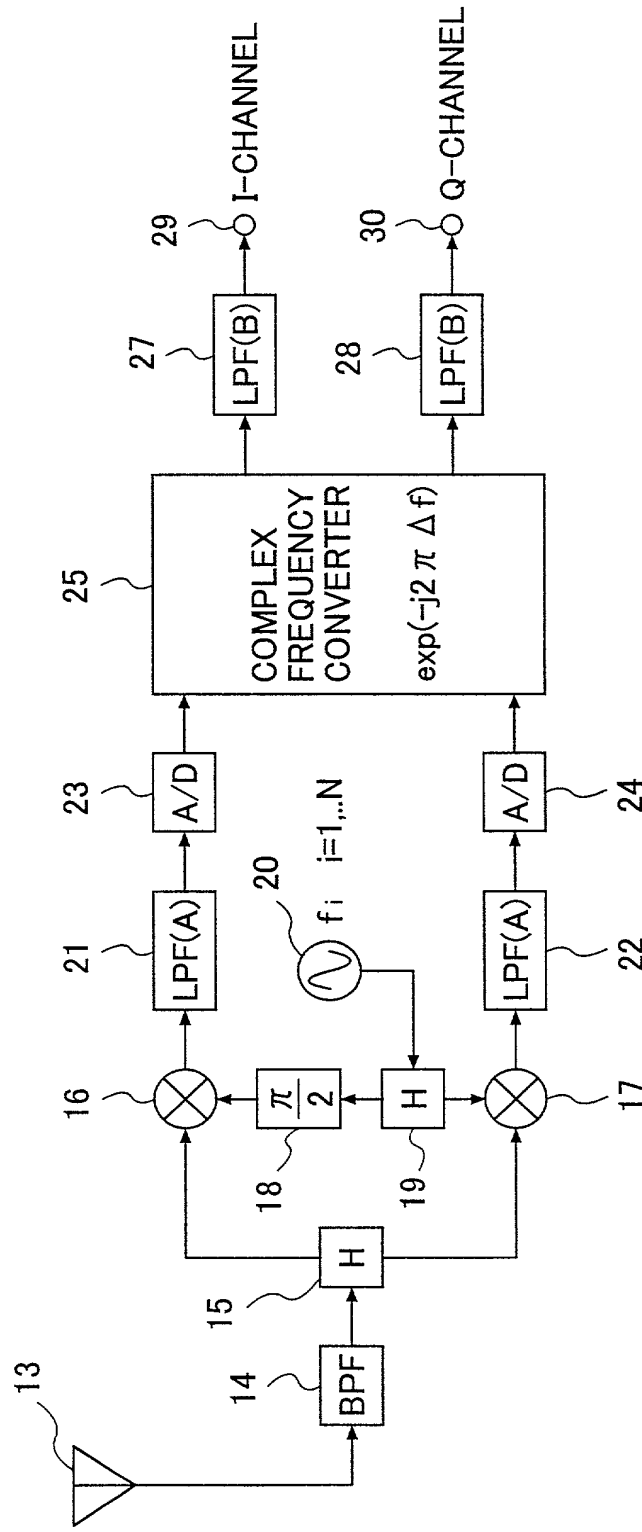


FIG. 4

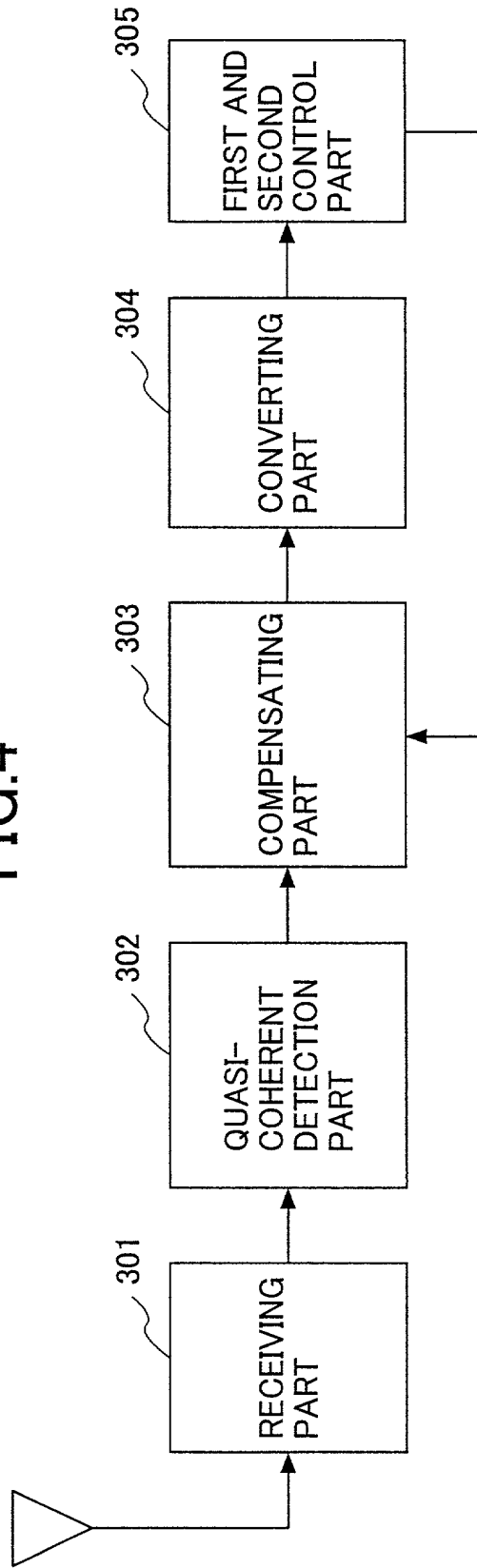
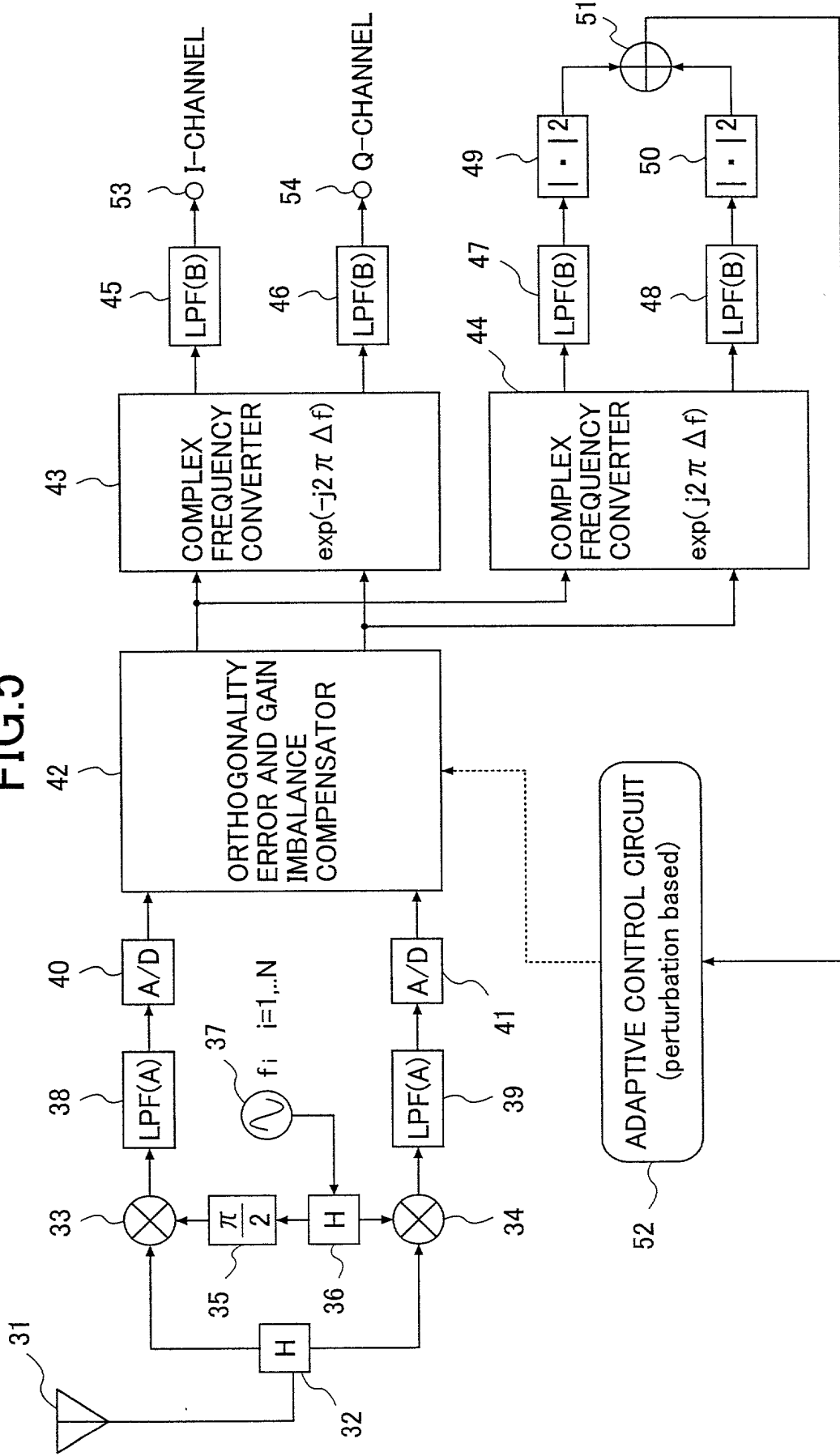


FIG. 5



LPF(A):WIDE BAND ANALOG FILTER OF RF STAGE
 LPF(B):NARROW BAND DIGITAL FILTER OF BB STAGE

FIG.6

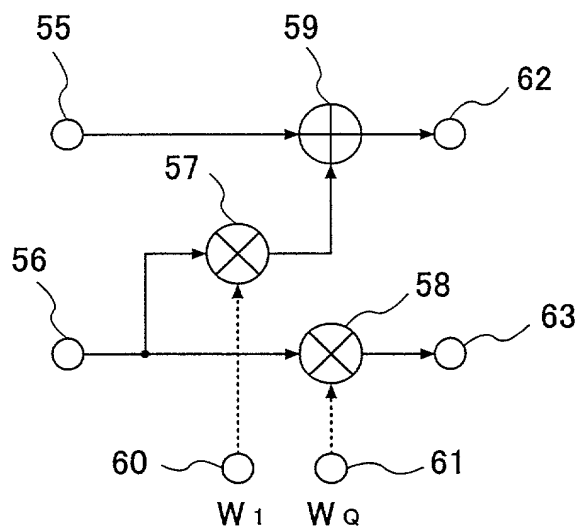


FIG. 7A

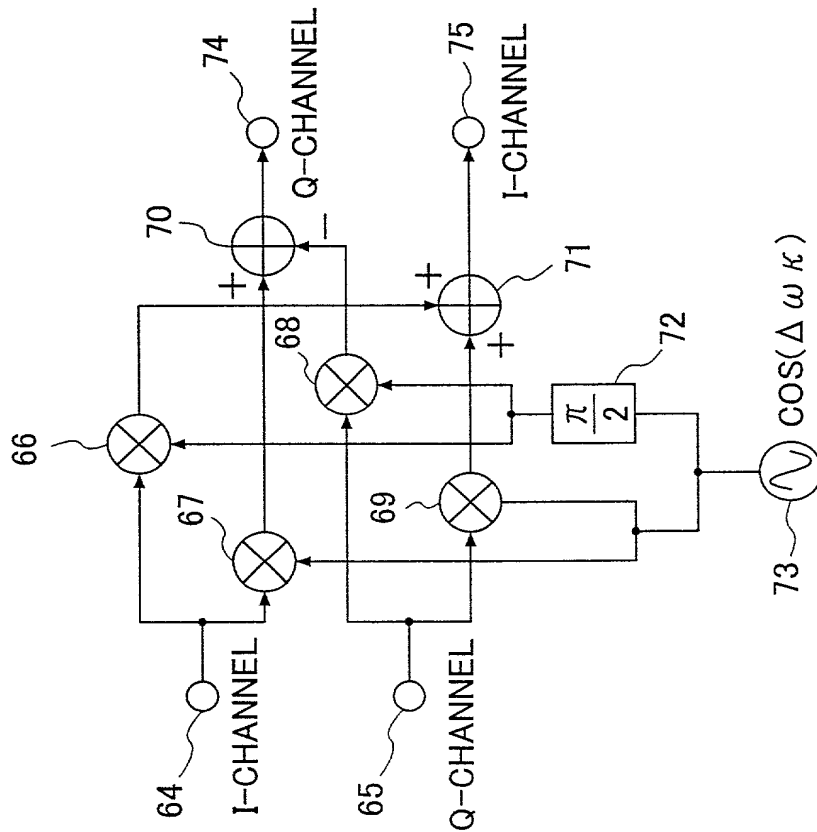
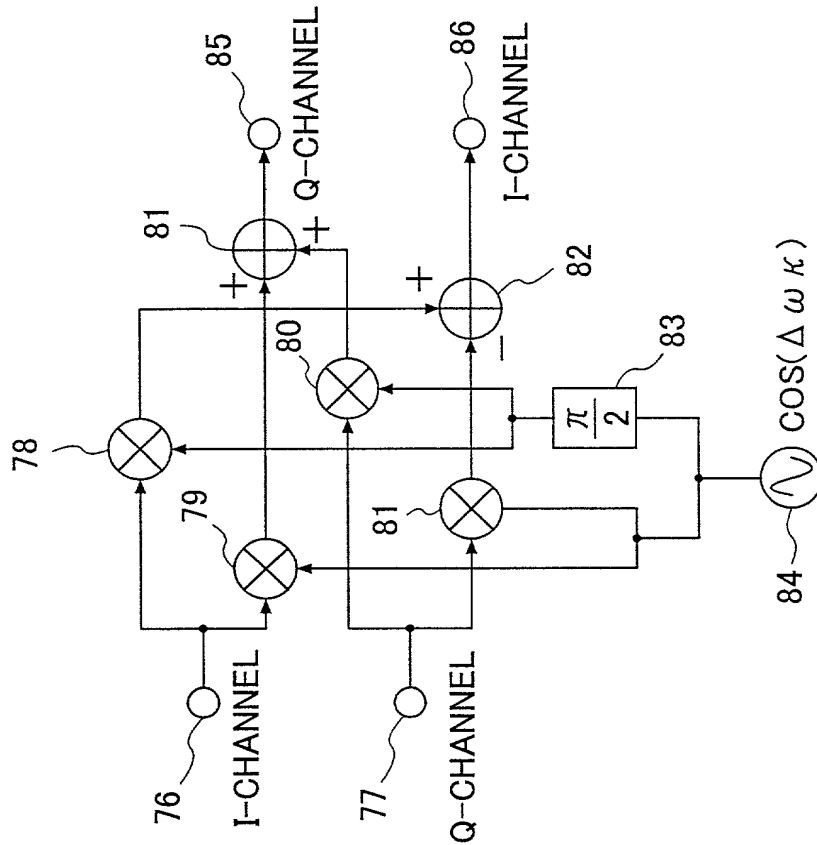


FIG. 7B



The diagram illustrates a perturbation-based adaptive control system for a complex frequency converter. The system is composed of several interconnected blocks and signal paths:

- Antenna (87):** Receives an input signal.
- Orthogonality Error and Gain Imbalance Compensator (97):** The central processing block that receives feedback from the adaptive control circuit and provides control signals to the complex frequency converter and the phase/amplitude estimation circuit.
- Complex Frequency Converter (98):** Converts the input signal based on the control signals from the compensator. It includes a phase shift of $\exp(-j2\pi\Delta f)$.
- Phase/Amplitude Estimation Circuit (106):** Estimates the phase and amplitude of the output signal and provides feedback to the compensator.
- Adaptive Control Circuit (107):** A perturbation-based control circuit that receives the estimated phase and amplitude and provides a control signal to the compensator.
- Signal Paths and Processing:**
 - The input signal is processed by a series of blocks: **LPF(A) (93)**, **A/D (95)**, and **Complex Frequency Converter (98)**.
 - The output signal is processed by: **Complex Frequency Converter (98)**, **LPF(B) (100)**, and **A/D (96)**.
 - The output signal is also processed by a series of blocks: **LPF(A) (94)**, **A/D (96)**, and **Complex Frequency Converter (98)**.
 - The output signal is also processed by a series of blocks: **LPF(B) (100)**, **A/D (96)**, and **Complex Frequency Converter (98)**.
 - The output signal is also processed by a series of blocks: **LPF(A) (94)**, **A/D (96)**, and **Complex Frequency Converter (98)**.
 - The output signal is also processed by a series of blocks: **LPF(B) (100)**, **A/D (96)**, and **Complex Frequency Converter (98)**.

LPF(A):WIDE BAND ANALOG FILTER OF RF STAGE
LPF(B):NARROW BAND DIGITAL FILTER OF BB STAGE

FIG.9

106

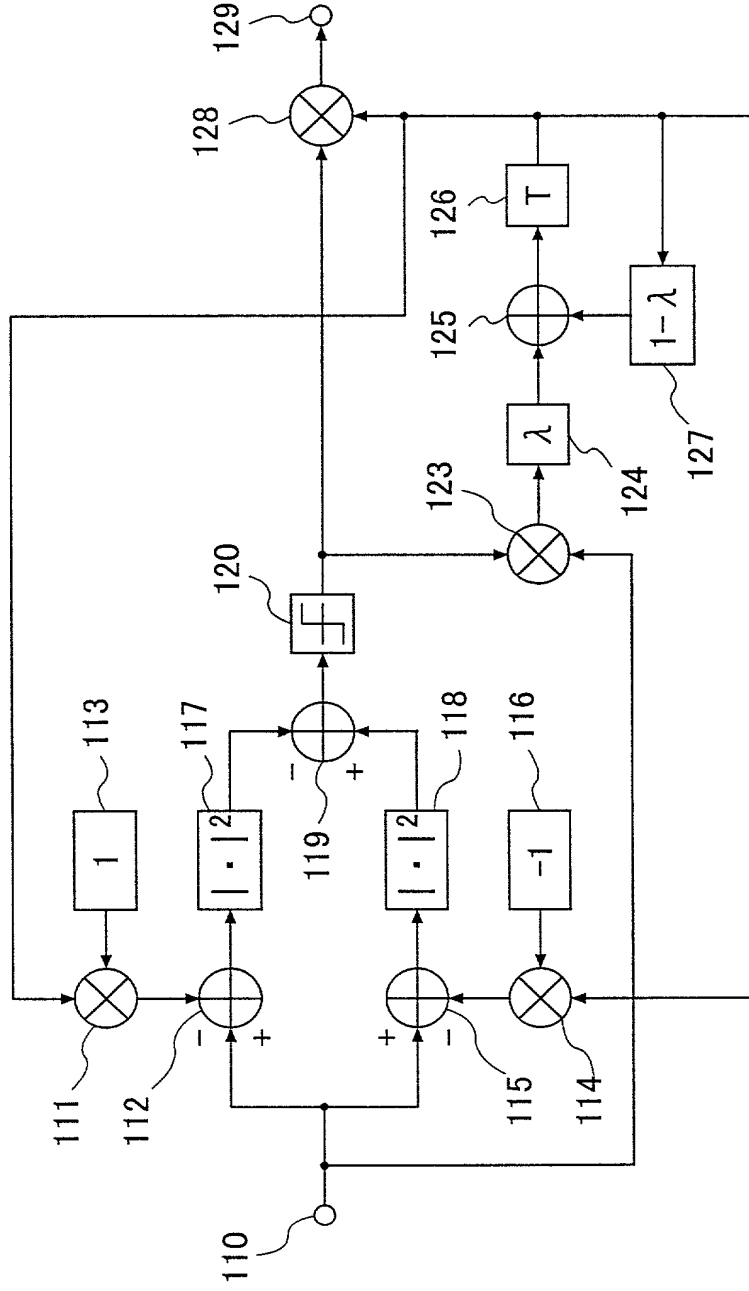


FIG. 10

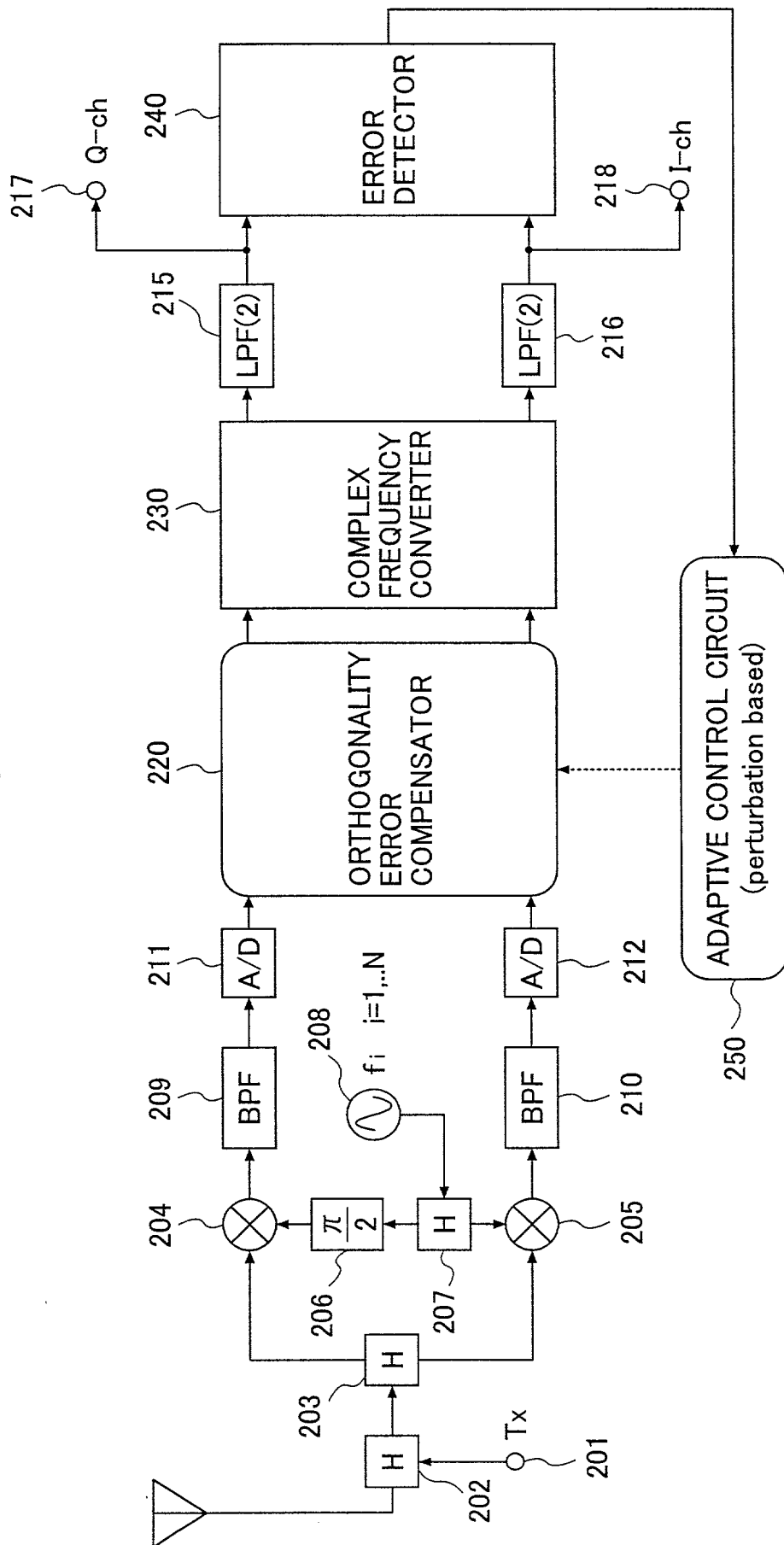


FIG.11

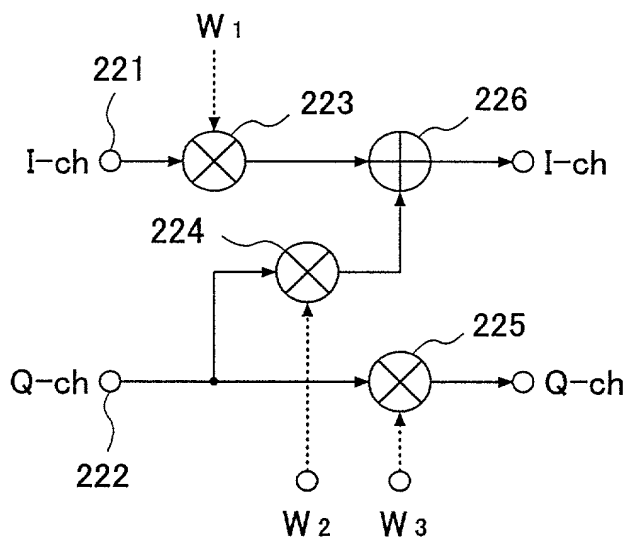


FIG.12

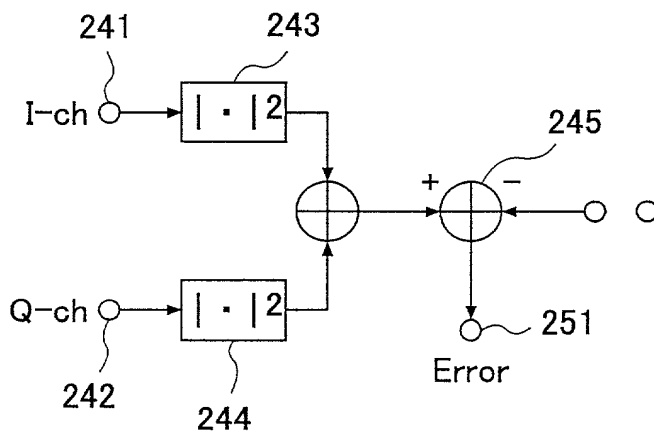


FIG.13

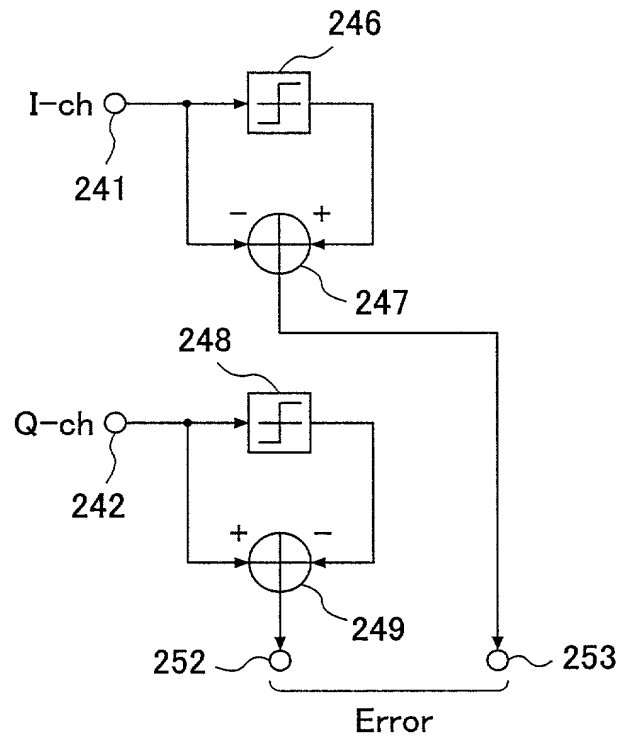


FIG.14

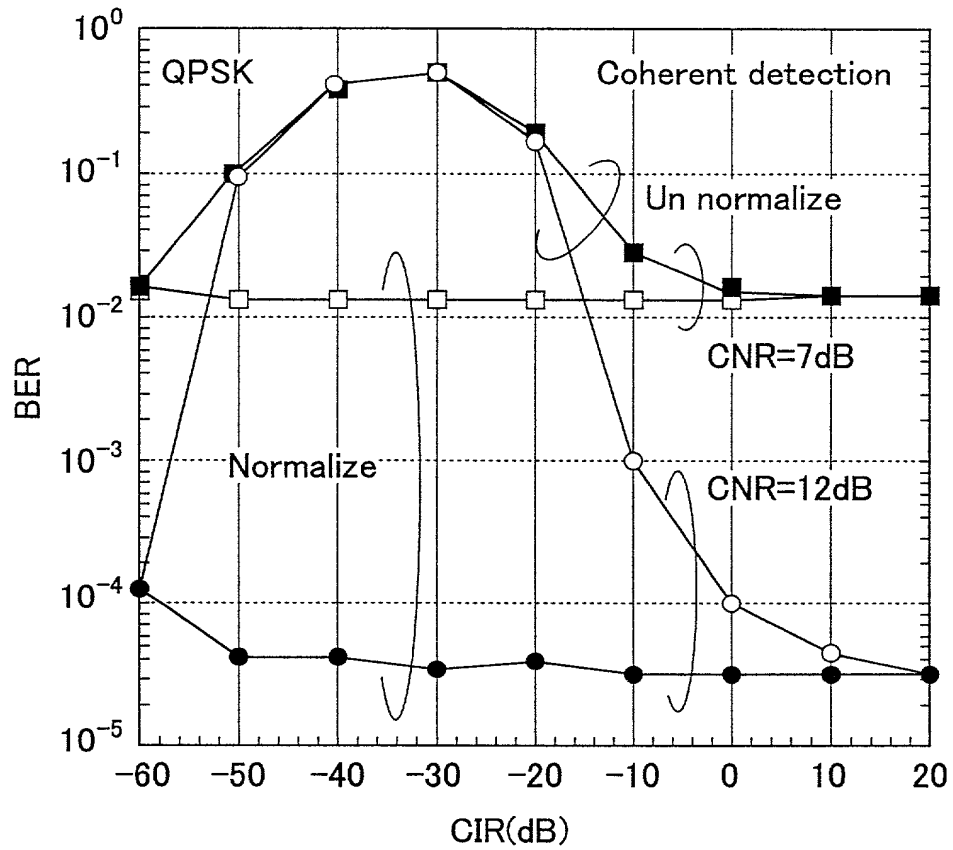


FIG.15

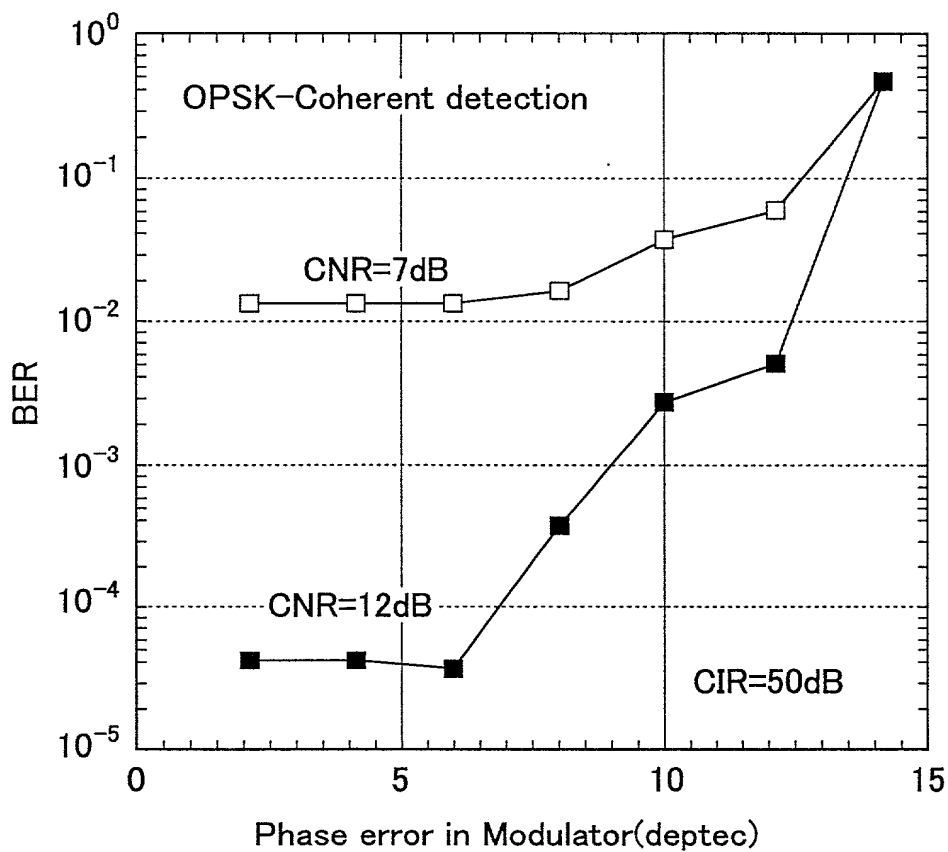


FIG.16

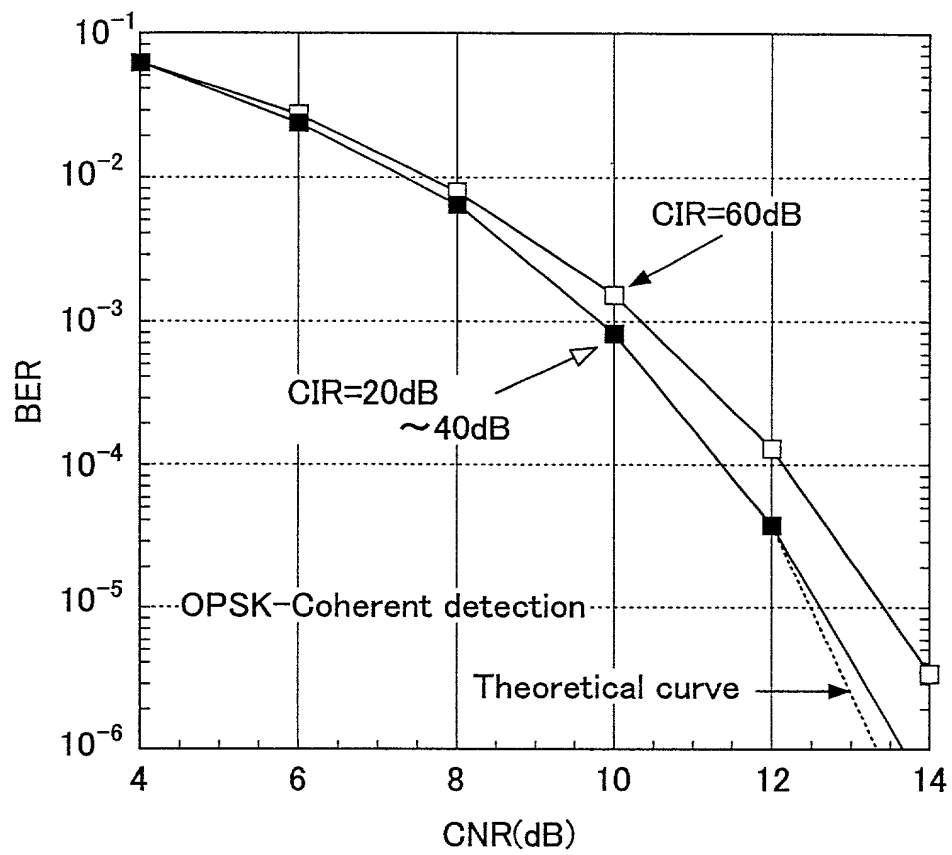


FIG. 17

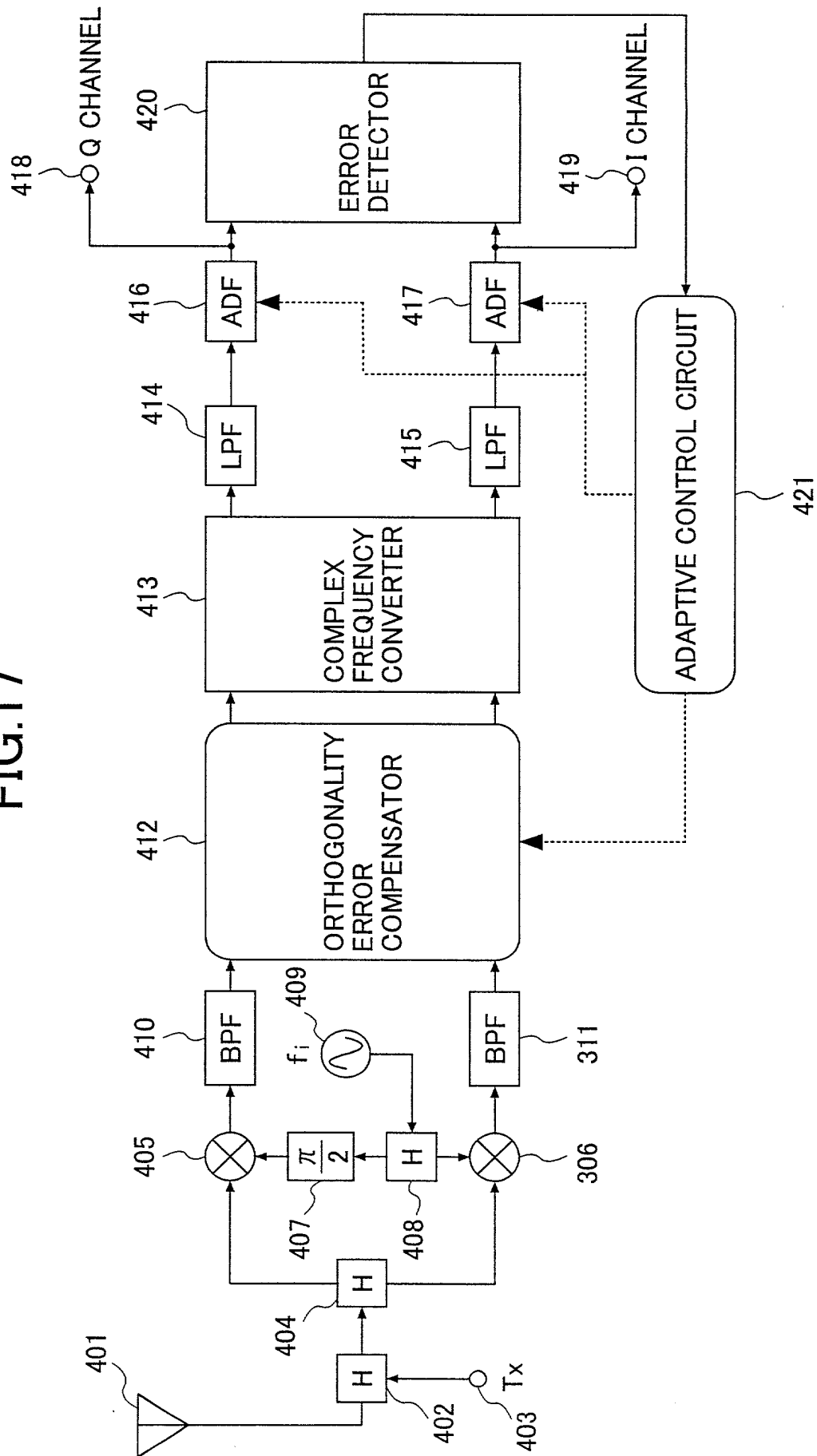


FIG.18

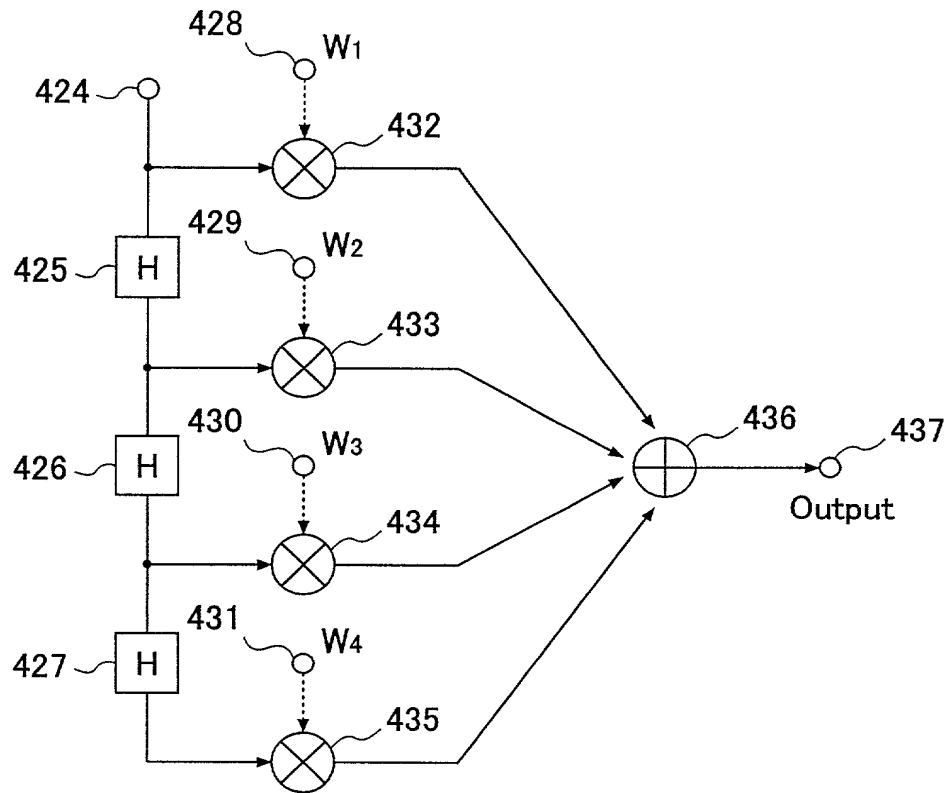


FIG.19

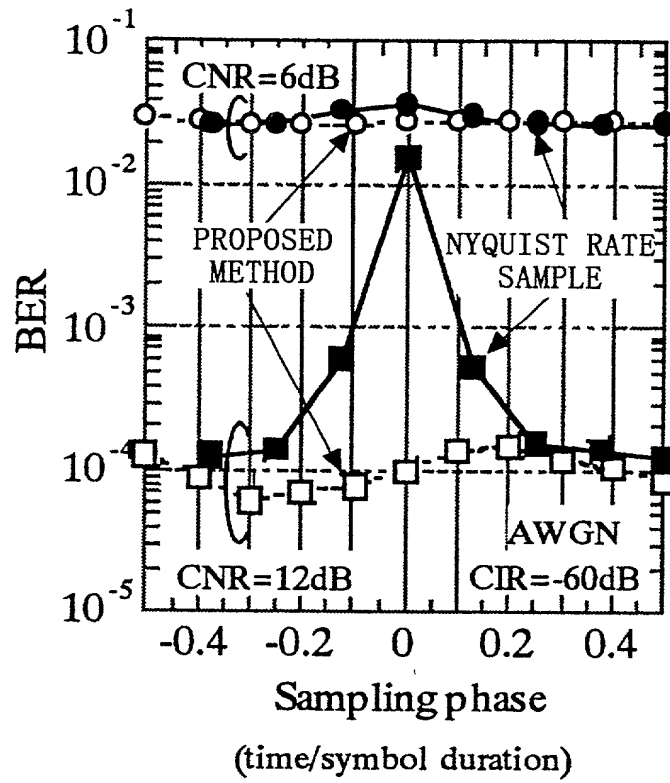


FIG.20

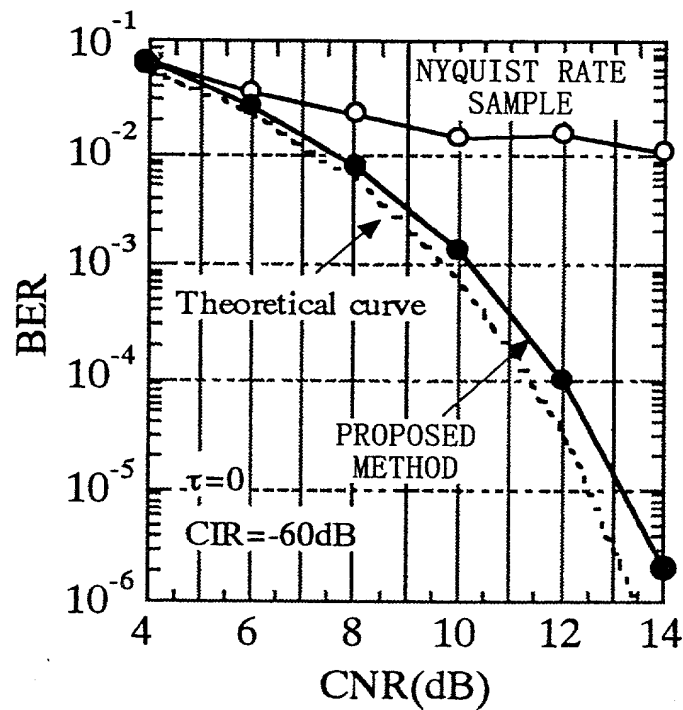


FIG.21

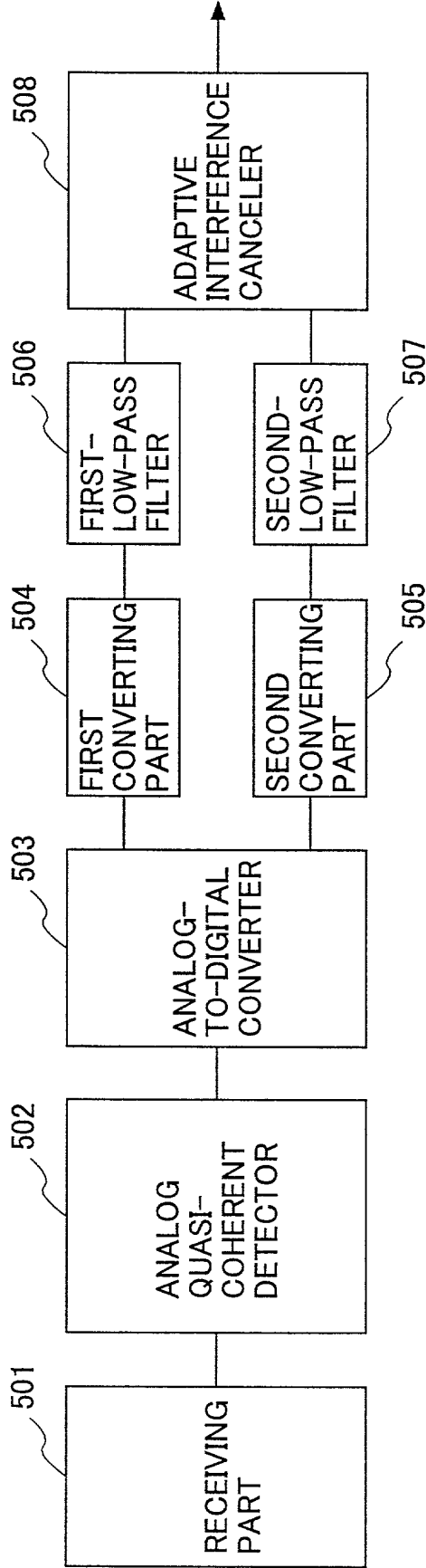


FIG.22

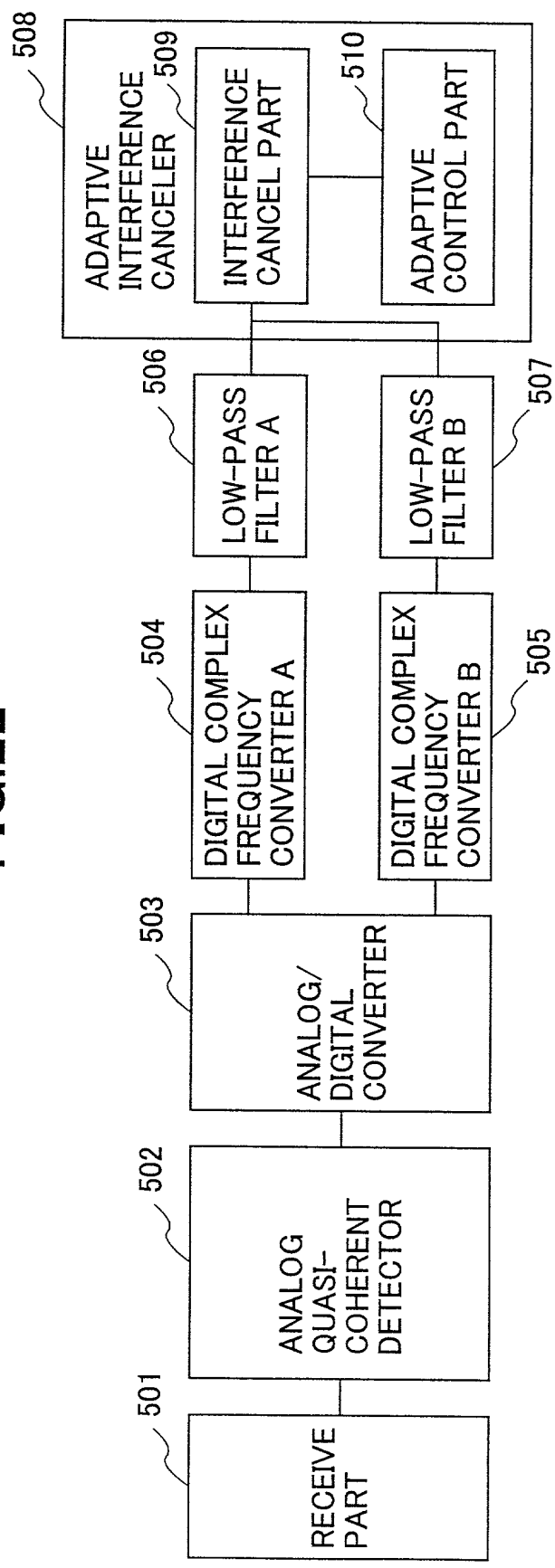


FIG.23

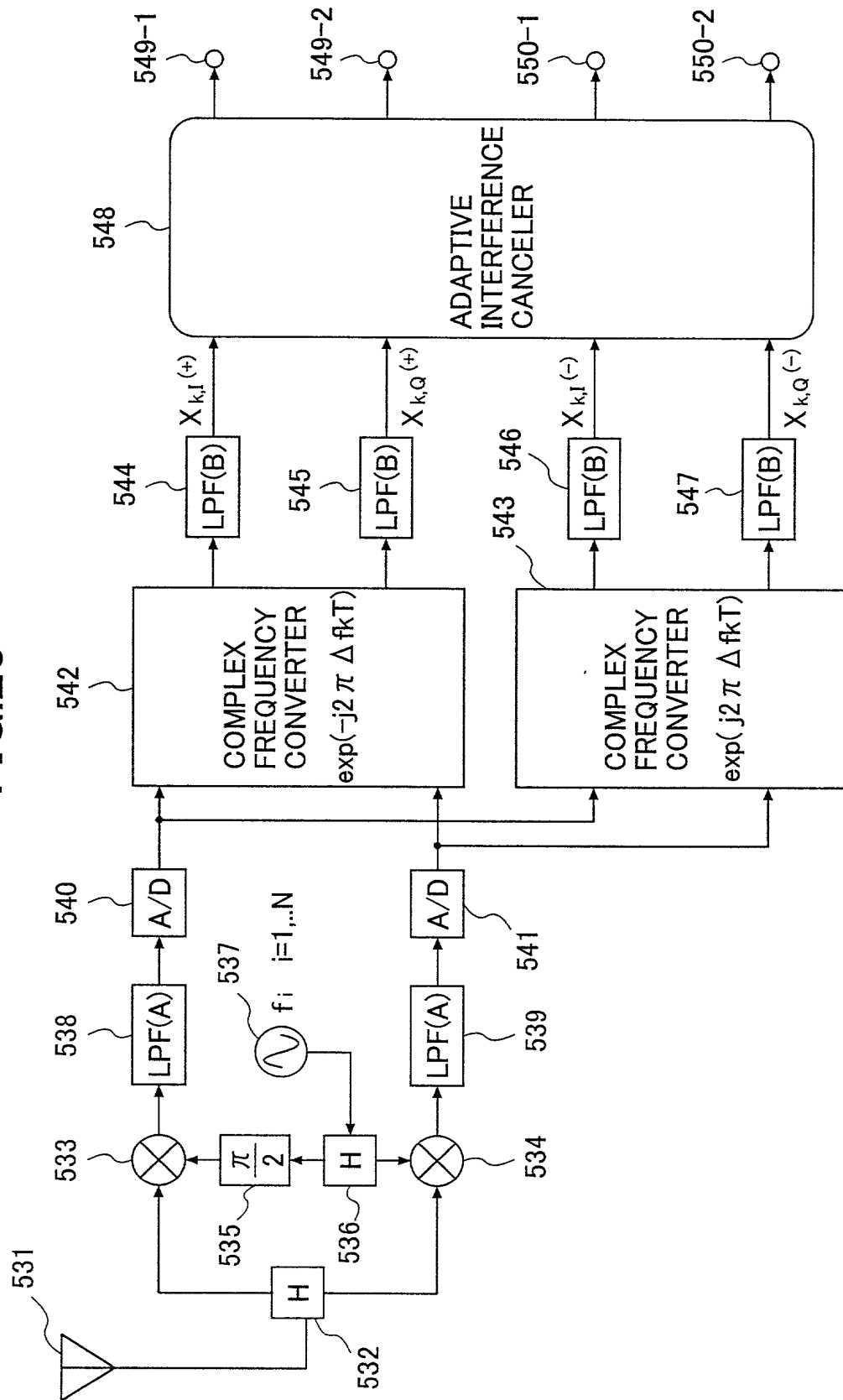


FIG.24

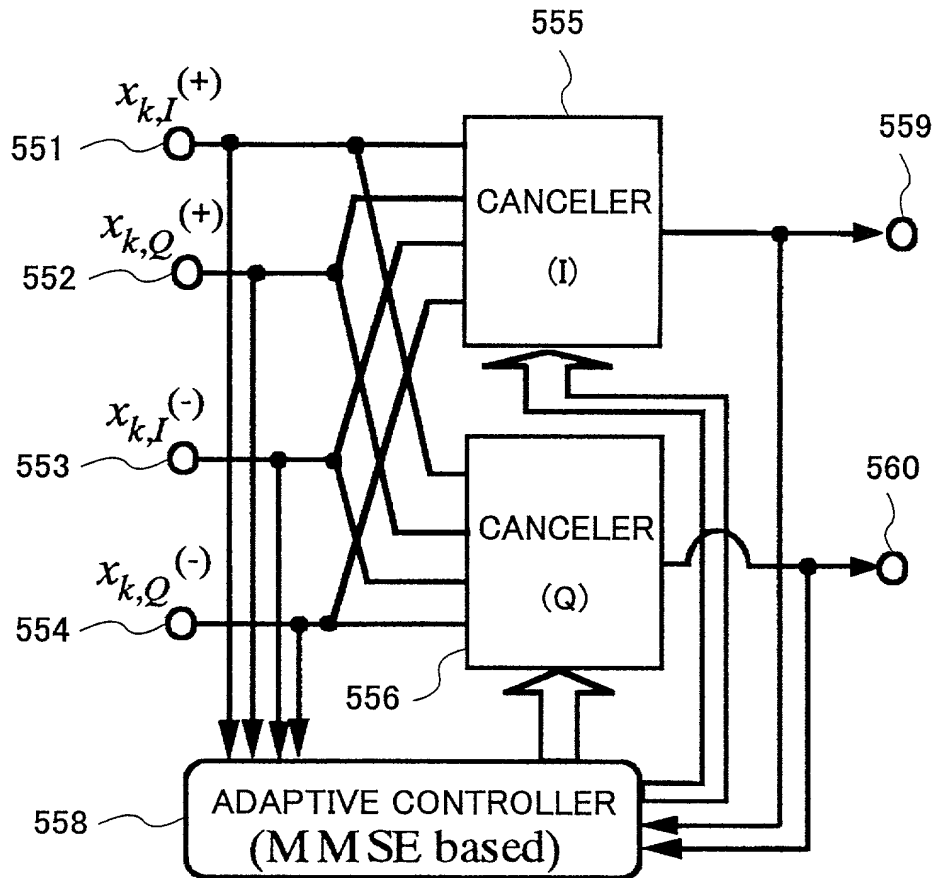


FIG.25

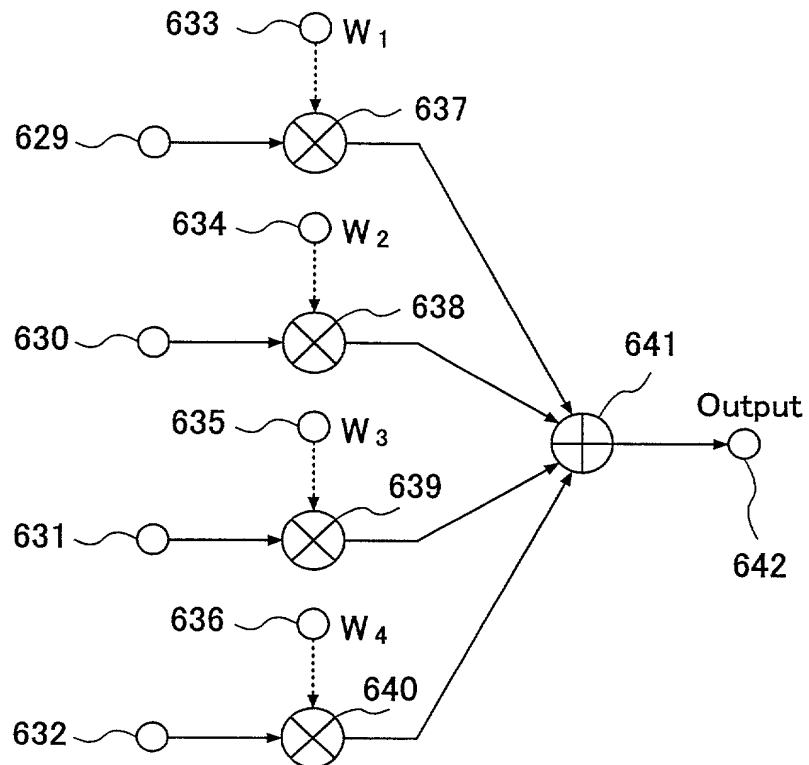


FIG. 26B

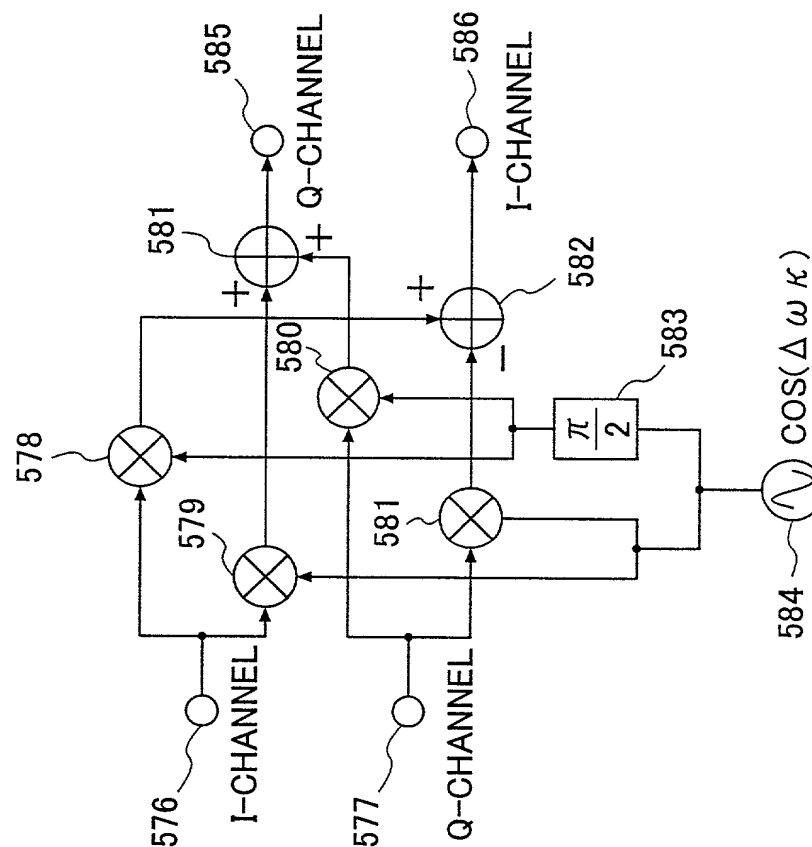


FIG.27

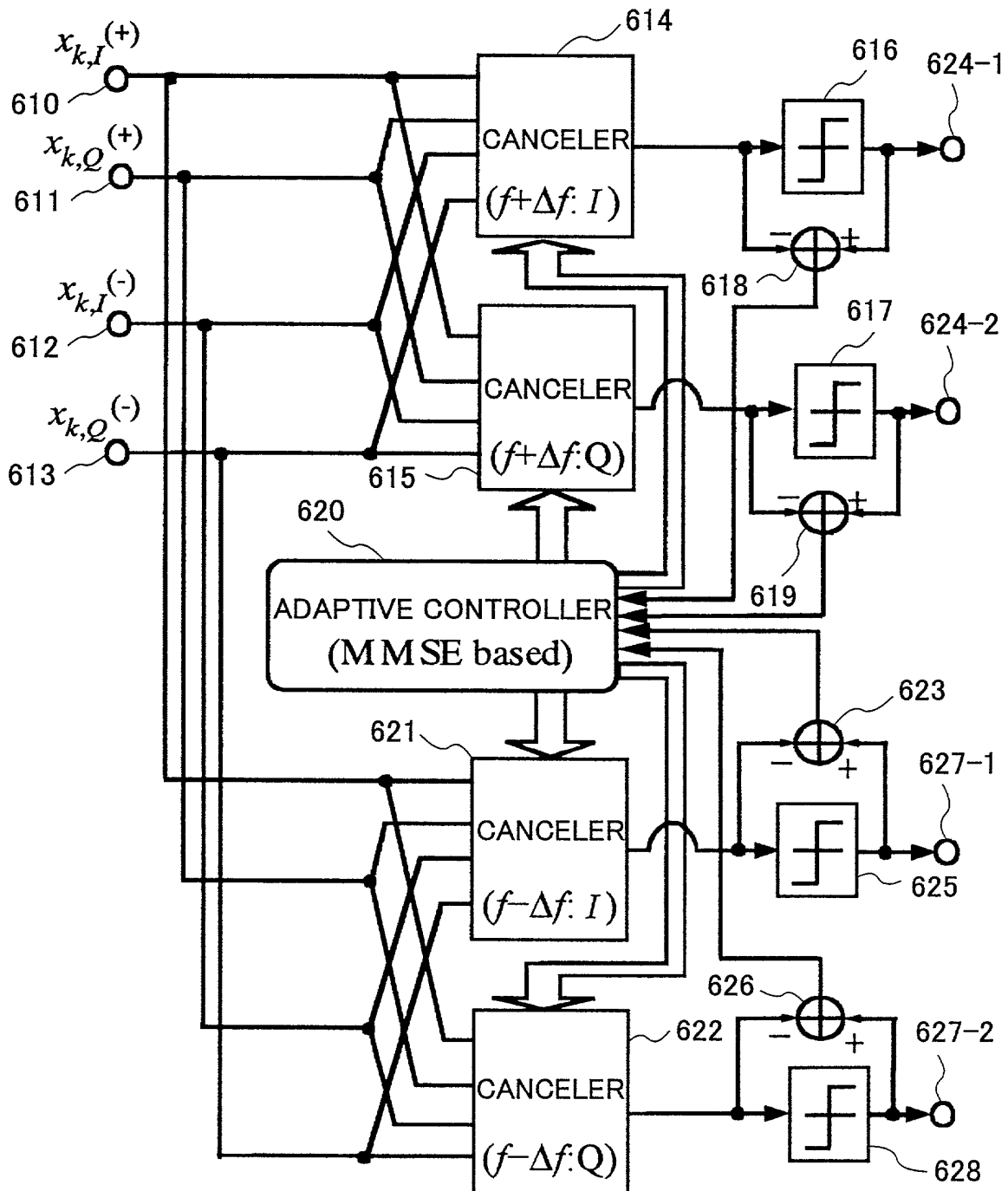


FIG. 28

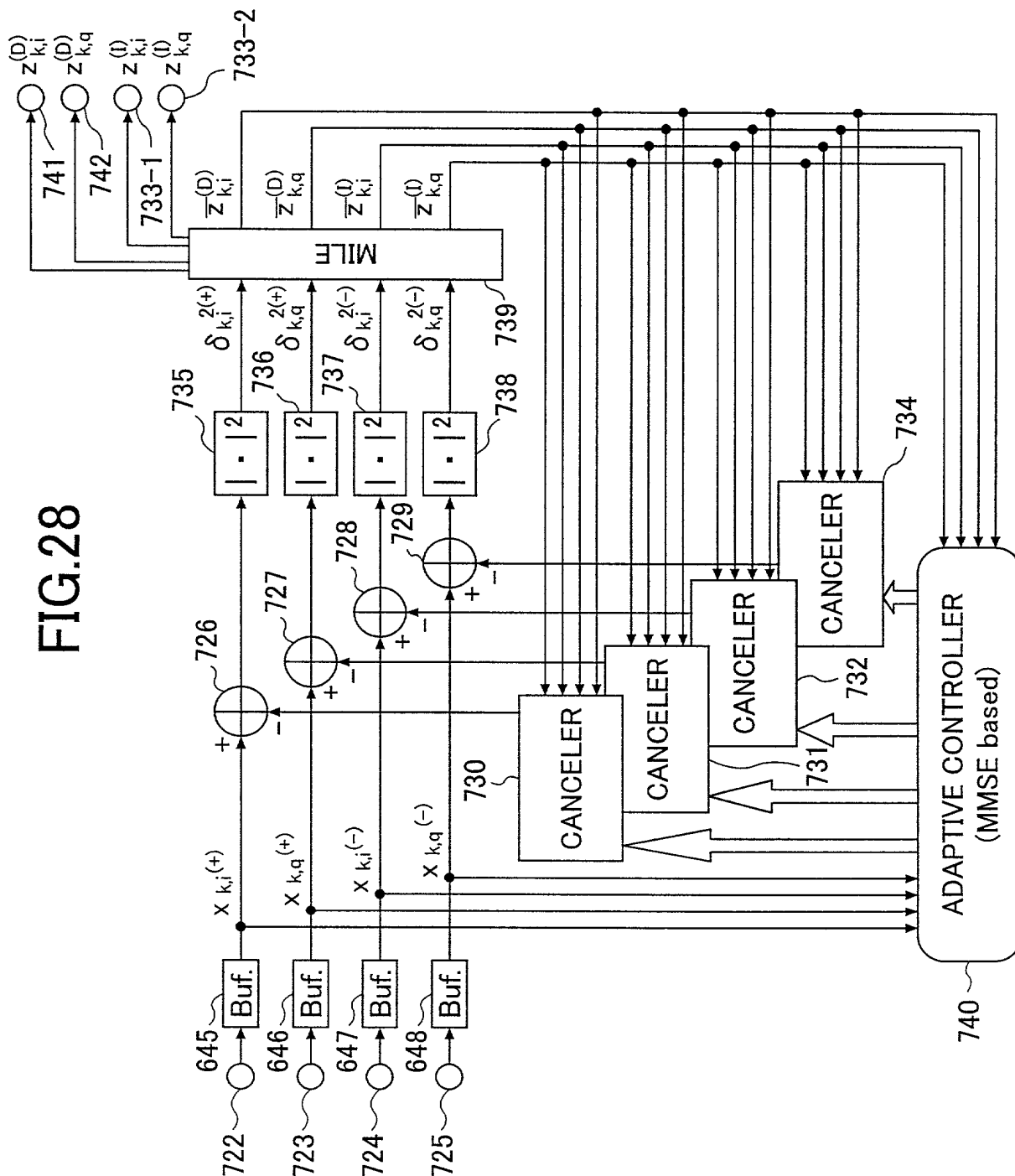


FIG.29

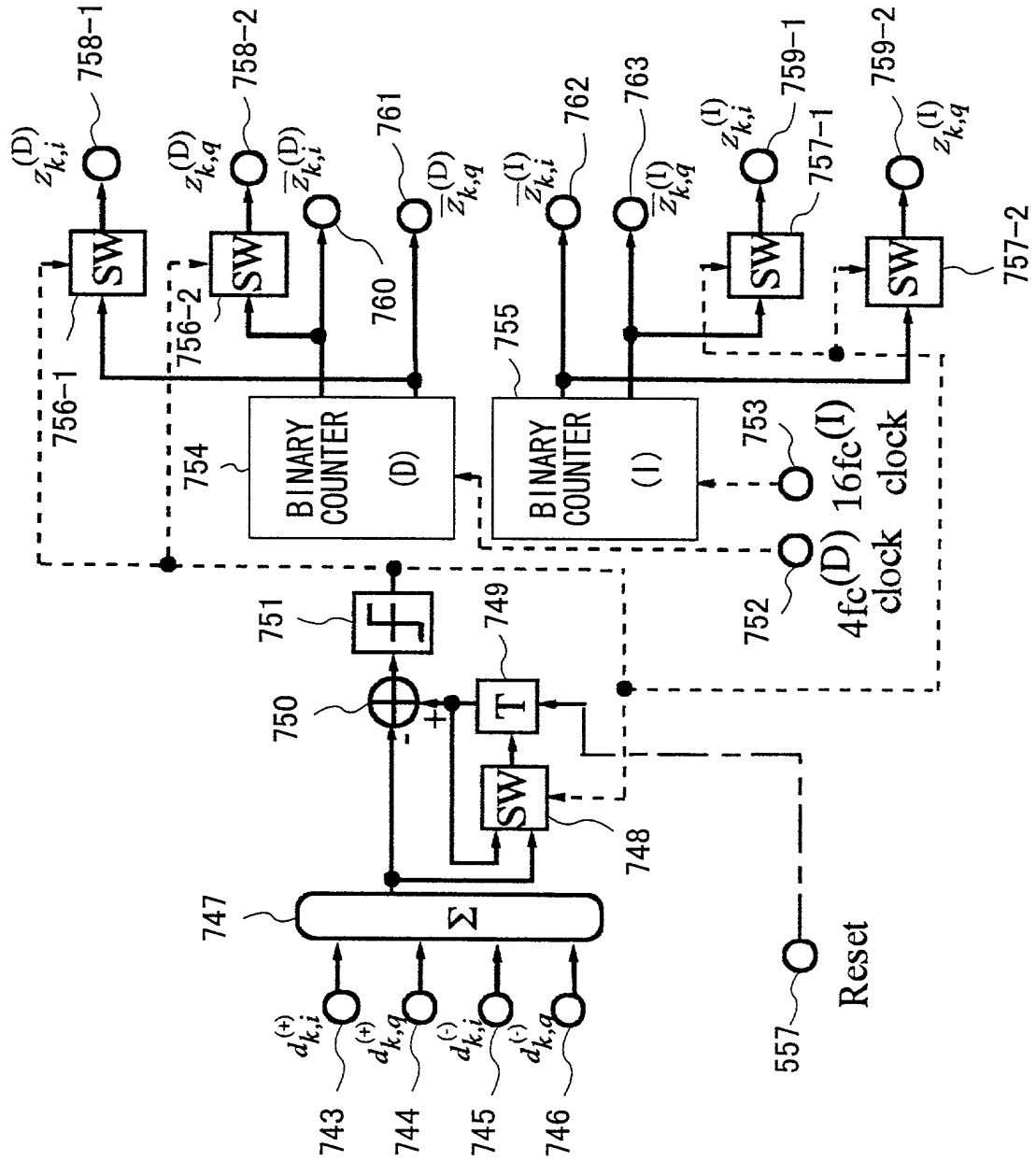


FIG.31

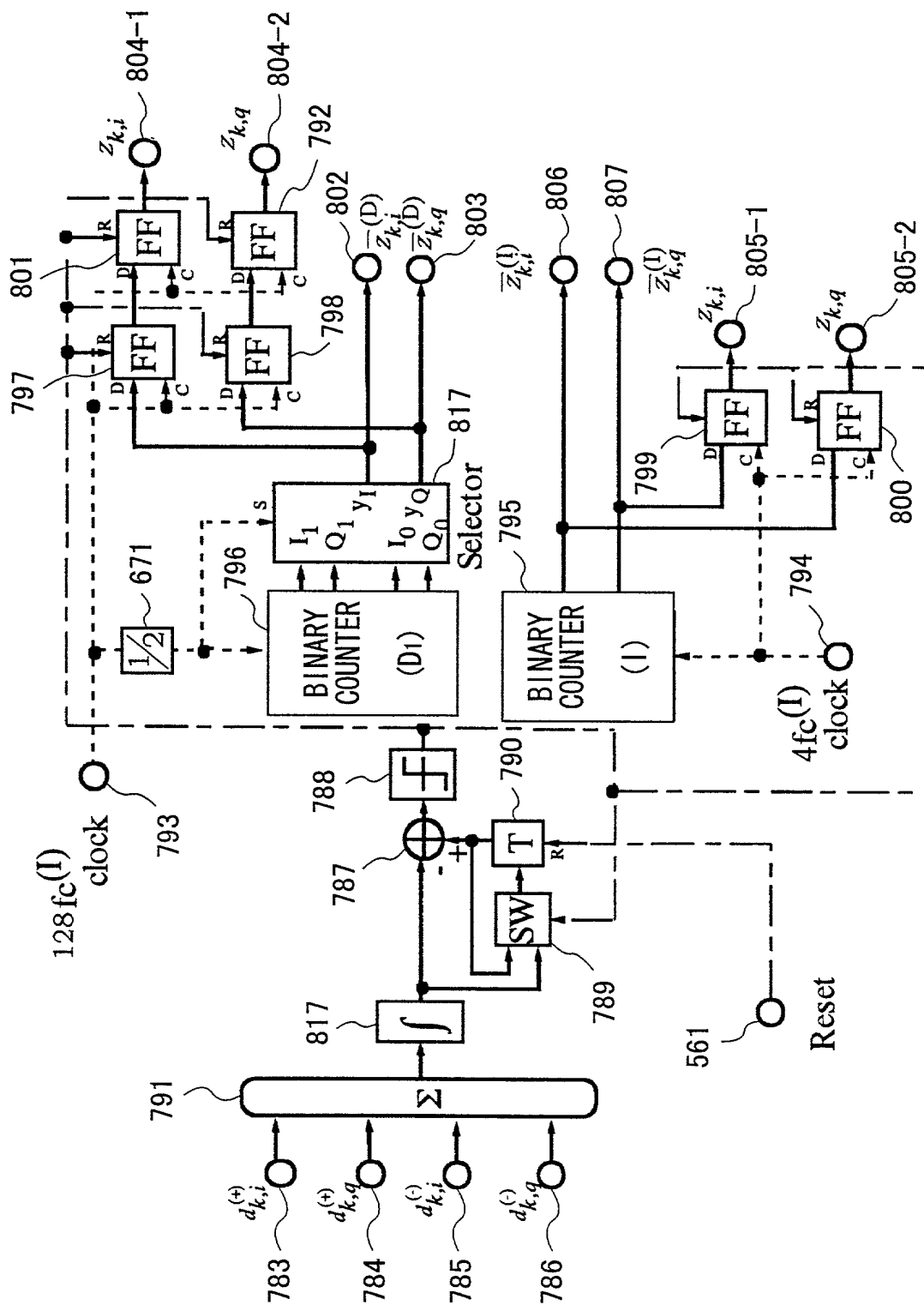


FIG.32

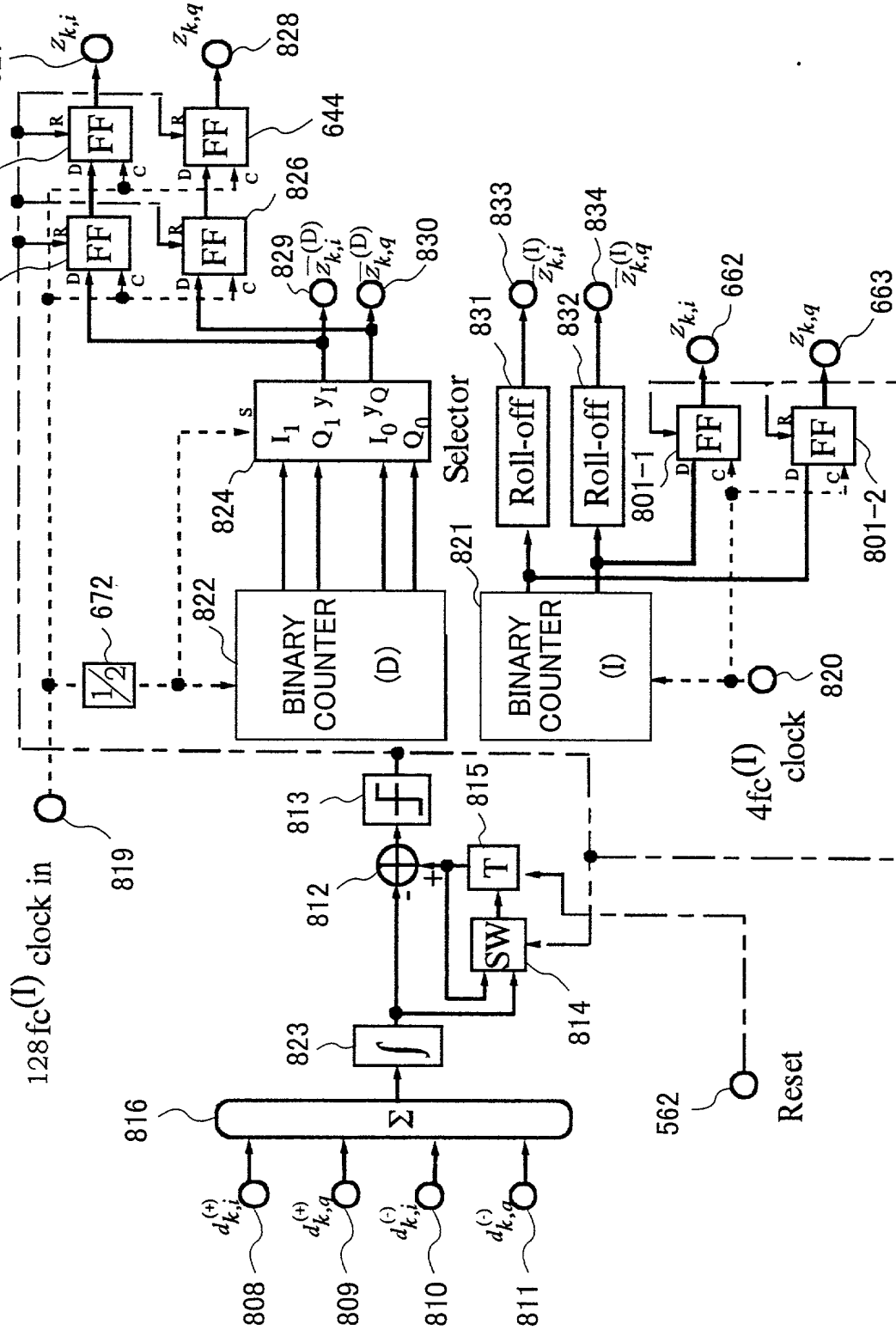


FIG.33

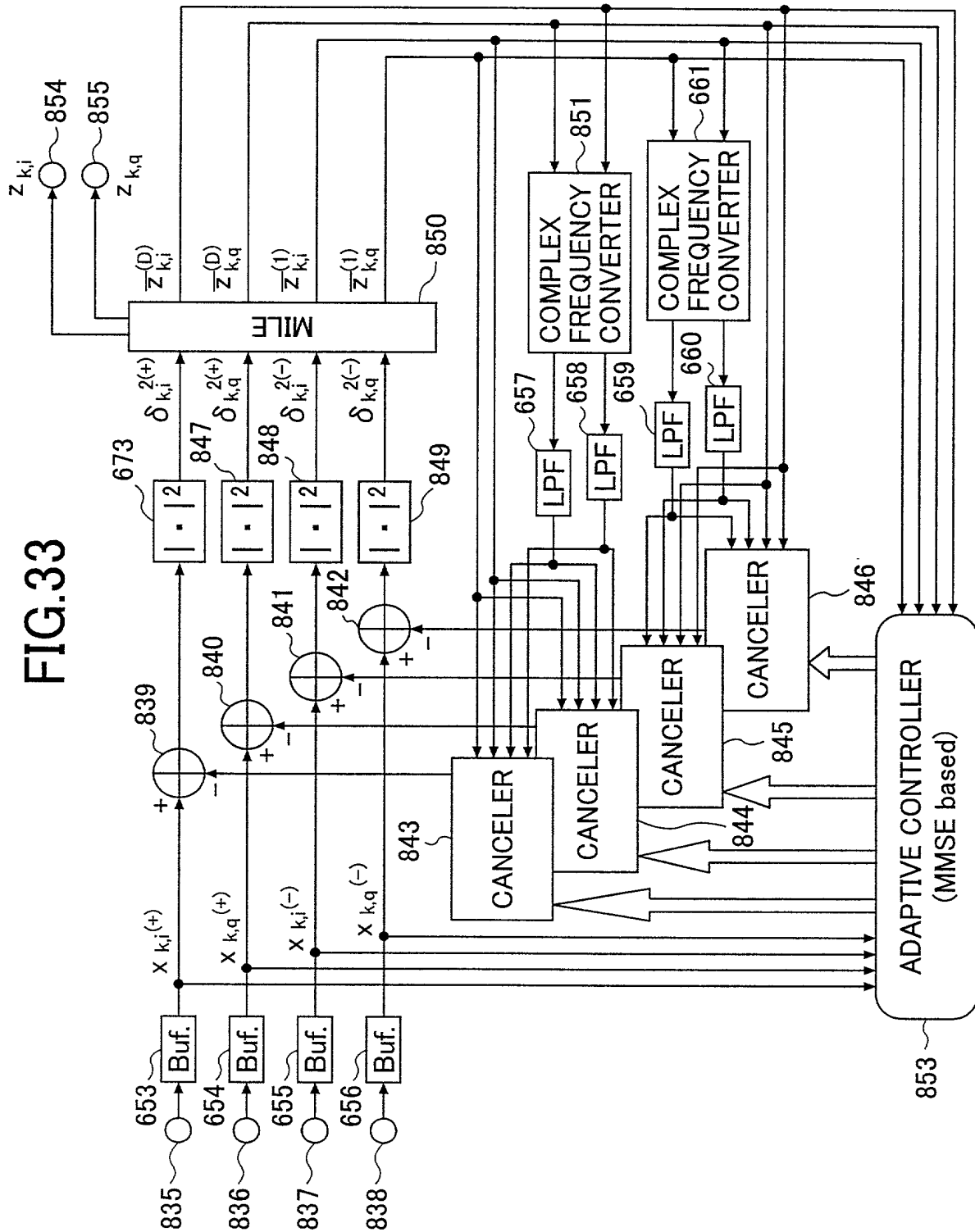


FIG. 34

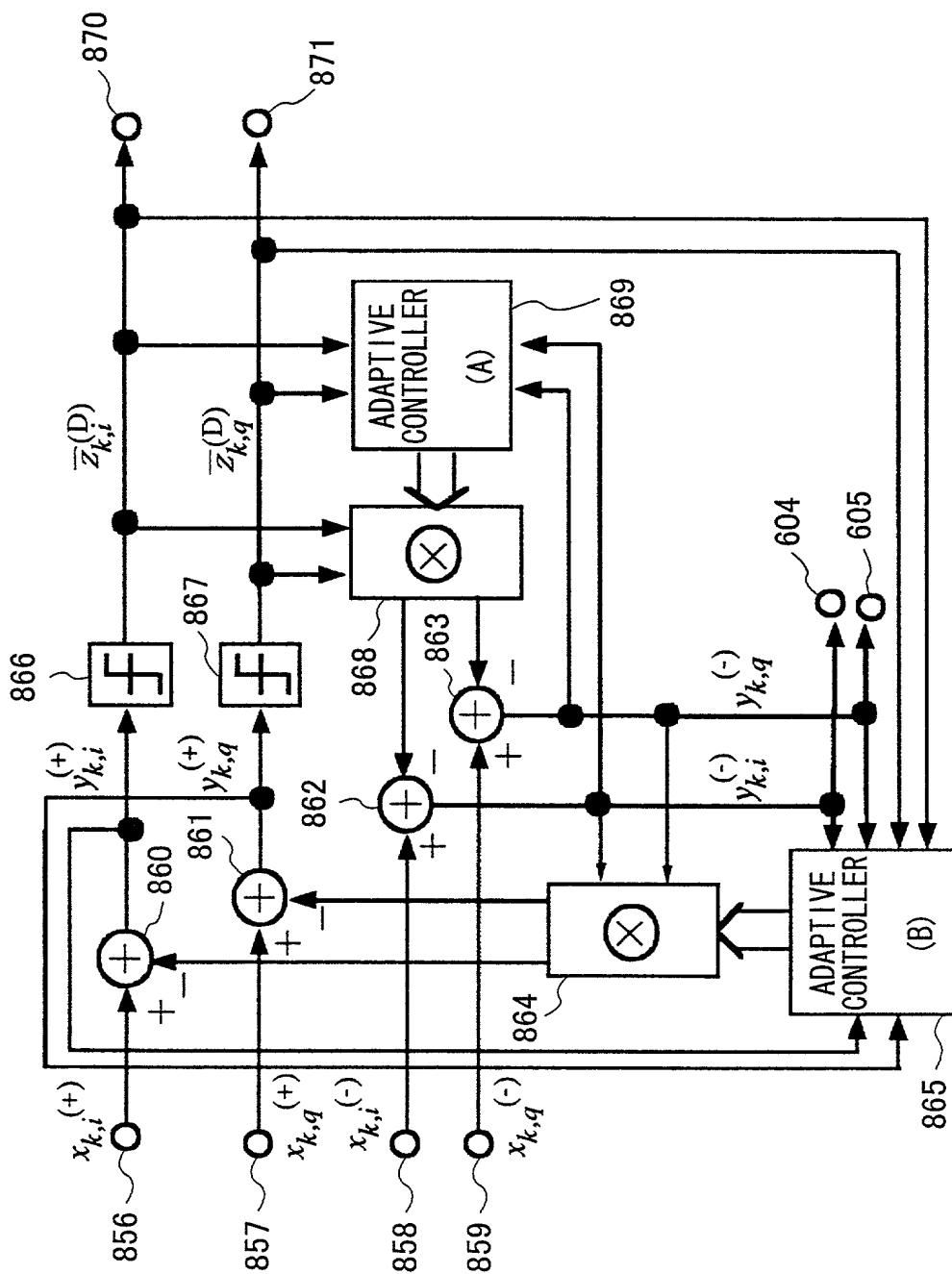


FIG.35

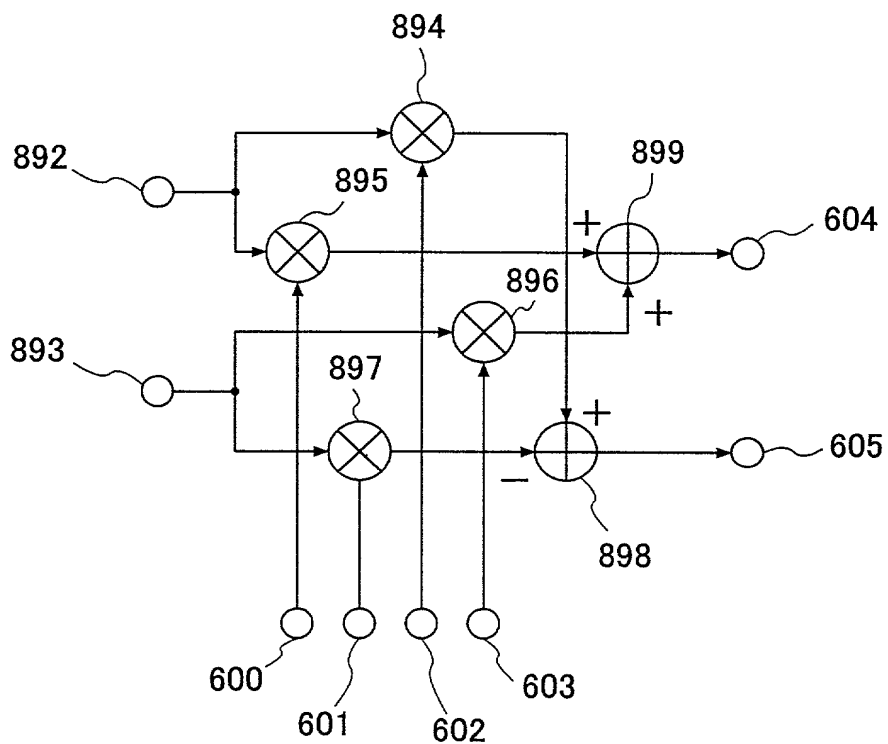


FIG.36

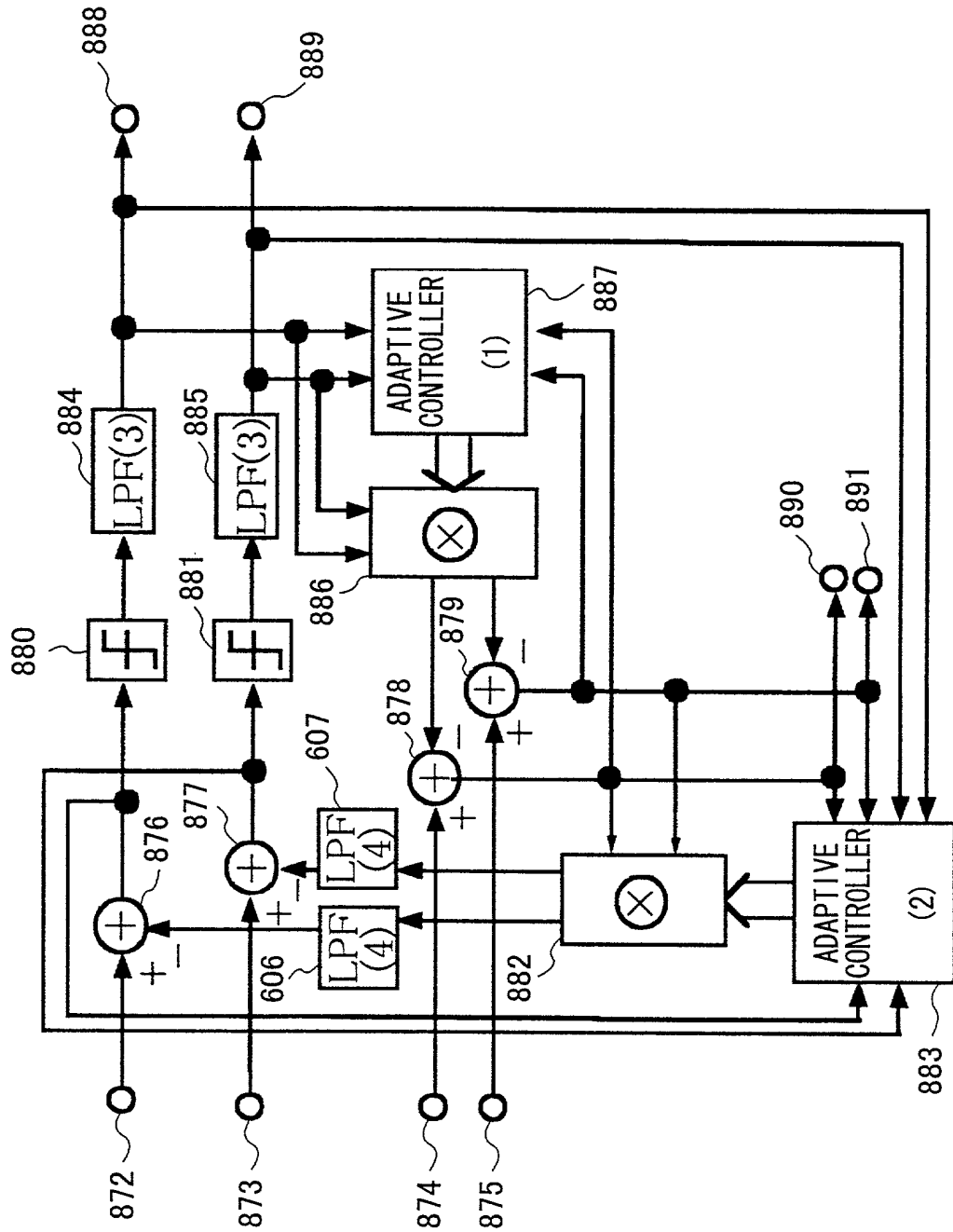


FIG.38

